guide plate is used. Other experiment conditions are the same as those described in the above example.

TABLE

In Case of 8 Inches (cd/m²)

Position of Over-hang	Measurement Position								
Portion	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[5]	[9]
A	964	1078	980	1060	1100	1065	1090	1080	1085
B	995	1678	1020	1055	1100	1058	1060	1080	1065
C	1040	1078	1050	1050	1100	1055	1038	1080	1035

TABLE

In Case of 9 Inches (cd/m²)

Position of Over-hang	Measurement Position								
Portion	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[5]	[9]
A	1030	1127	1035	1150	1150	1148	1165	1130	1170
B	1060	1127	1075	1142	1150	1145	1100	1130	1110
C	1110	1127	1116	1135	1150	1138	1115	1130	1120

As is apparent from the above two tables, when the overhang portions **5***a* and **6***a* are closer to the incident surface **1**, the luminance at positions near both the ends ([1] and [3]) near the incident surface **1** much decrease. Therefore, in consideration of the uniformity of the luminance distribution on the emission surface **2**, the overhang portions **5***a* and **6***a* are preferably arranged at positions distant from the incident surface **1** and located on the side of lower surface **4** with respect to at least the intermediate position between the incident surface **1** and the lower surface **4**, i.e., positions near the thin portion.

According to the present invention, assume that a mold having a structure in which a molten material injected from the gate flows from the incident surface **1** to the lower surface **4** is used. In this case, when the overhang portions **5***a* and **6***a* are arranged on the side of lower surface **4** with respect to the intermediate position between the incident surface **1** and the lower surface **4**, the overhang portions **5***a* and **6***a* having good shape transferring characteristic and a high shape accuracy can be easily formed. When the shape accuracy of the overhang portions **5***a* and **6***a* is high as described above, an accuracy in positioning the light guide plate can be increased.

The relationships between positions (A, B, C) of the overhang portions **5***a* and **6***a* with respect to the incident surface **1** and the decrease in luminance near both the ends near the incident surface **1** are the same as those obtained for a light guide plate having a uniform thickness from the incident surface **1** to the lower surface **4**. For this reason, also in this case, the mold preferably has the structure in which the molten material injected from the gate flows from the incident surface **1** to the lower surface **4** and the overhang portions **5***a*, **6***a* are desirably arranged on the side of lower surface **4** with respect to the intermediate position between the incident surface **1** and the lower surface **4**. Although the overhang portions **5***a* and **6***a* are arranged on the side surfaces **5** and **6** in FIG. **1**, the overhang portions **5***a* and **6***a* may be arranged on the emission surface **2**, the reflecting surface **3**, or the lower surface **4** depending on the situation.

In addition, the shape of a light guide plate to which the present invention can be applied is not limited to the shape of the light guide plate described in this embodiment as a matter of course. More specifically, the present invention can be applied to the light guide plates having the shapes described in the above-mentioned known publications and the light guide plates having the shapes shown in FIGS. **7**, **8** or **11**. When the light guide plate having the shape shown in FIG. **11** is used, it should be noted that two upper and lower incident surfaces are formed.

In this case, when a mold structure is designed such that the molten material flows from one incident surface to the other incident surface, the material flows almost in the same manner as the embodiment shown in FIG. **1** while a gradual changing from a fan shape flow pattern with some extent into a parallel flow pattern is caused until it reaches the central position in the flow direction, i.e. the thin portion. Passing through the central position, a fan-like flow pattern tends to appear again because of the increasing thickness.

However, in general, this tendency is very weak, with the result that filling is completely realized substantially in the same manner as the embodiment shown in FIG. **1**, with the parallel flow pattern kept.

It will be understood easily from the above detailed description that the present invention provides light guide plates for a surface light source device, including ones of ultra-thin types, which are not subject to incomplete filling in the cavity of the used mold, incomplete transferring of unevenness of various shapes and generation of weld line or warping, and further which enable uniform light emission.

What is claimed is:

1. A light guide plate for a surface light source device, manufactured by injection molding, comprising:

an incident surface in a longitudinal direction of a slender light source; and

an emission surface for emitting incident light received at said incident surface, in a direction perpendicular to the longitudinal direction of said incident surface,

said light guide plate being large in thickness at a position near said incident surface and decreasing in thickness with increasing distance from the incident surface,

wherein said incident surface is partially or entirely formed as a cut surface which remains after cutting a protruding portion from the light guide plate, the protruding portion having a supplemental cavity around an injection molding gate.

2. A plate according to claim **1**, wherein said cut surface is symmetrically formed with respect to an nearly central portion of said incident surface in the longitudinal direction.

3. A plate according to claim **1** or **2**, wherein said cut surface is formed at a portion of said incident surface in a latitudinal direction.

4. A plate according to claim **1**, wherein said cut surface projects from another plane of said incident surface.

5. A light guide plate according to claim **2**, wherein said cut surface projects from another plane corresponding to the other portion of said incident surface.

6. A light guide plate according to claim **3**, wherein said cut surface projects from another plane corresponding to the other portion of said incident surface.

7. A light guide plate according to claim **4** or **5**, wherein said cut surface projects so that said cut surface is parallel to another plane corresponding to the other portion of said incident surface,

the projecting distance of said projection being not greater than about 1 mm, and said cut surface having a surface roughness of not greater than about 50 μm in terms of 10-point average roughness (Rz).

8. A light guide plate according to claim **6**, wherein said cut surface projects so that said cut surface is parallel to another plane corresponding to the other portion of said incident surface,

the projecting distance of said projection being not greater than about 1 mm, and said cut surface having a surface roughness of not greater than about 50 μm in terms of 10-point average roughness (Rz).

9. A light guide plate according to claims **1, 2, 4** or **5**, wherein said light guide is provided with a protruding portion which has a location distant from said incident surface and functions for positioning said light guide plate when being assembled.

10. A light guide plate according to claim **3**, wherein said light guide is provided with a protruding portion which has a location distant from said incident surface and functions for positioning said light guide plate when being assembled.

11. A light guide plate according to claim **6**, wherein said light guide is provided with a protruding portion which has a location distant from said incident surface and functions for positioning said light guide plate when being assembled.

12. A method of manufacturing a light guide plate for a surface light source device which comprises an incident surface in a longitudinal direction of a slender light source and an emission surface for emitting incident light received at said incident surface in a direction perpendicular to the longitudinal direction of said incidence surface,

said light guide plate being large in thickness at a position near said incident surface and decreasing in thickness with increasing distance from the incident surface, the method comprising the steps of:

(a) providing a mold with a gate arranged at a position separated from a desired position of the incident surface, the gate being separated along a plane of the emission surface, the mold being further provided with an additional cavity to guide molten material from said gate to the desired position of the incident surface;

(b) injecting molten material into the mold through the gate to form a guide plate portion and a protruding portion, the guide plate portion connecting to the protruding portion in a vicinity of the desired position of the incident surface; and

(c) cutting the guide plate portion from the protruding portion in the vicinity of the desired position of the incident surface, the cutting operation providing a cut surface on the guide plate portion, the cut surface serving as at least a portion of the light incident surface.

13. A method of manufacturing a light guide plate according to claim **12**, wherein said gate faces an extension plane of the emission surface or a plane parallel with the emission surface.

14. A light guide preform comprising:

a guide plate portion and a protruding portion, the guide plate portion connecting to the protruding portion in a vicinity of a desired position of a light incident surface, the guide plate portion having a thickness direction and a light emission surface, the light emission surface being arranged perpendicular to the thickness direction, the guide plate portion having a thickness which decreases with increasing distance from the desired position of the incident surface, and

the protruding portion being separated from the desired position of the incident surface, in a direction extending away from the guide plate portion along a plane encompassing the light emission surface, the protruding portion have a thickness sufficient to allow uniform flow of a molten injection molding material therethrough.

15. (NEW) A method of manufacturing a light guide plate for a surface light source device, the light guide plate having an incident surface for light input and an emission surface for light output, comprising:

forming a preform using a mold which is provided with an injection molding gate located at a predetermined distance from an eventual location of the incident surface, the injection molding gate being located at a supplemental cavity to which a flow of molten resin is introduced through the injection molding gate, the molten resin flowing through the eventual location of the incident surface to expand generally symmetrically with respect to a direction perpendicular to the incident surface;

removing said preform from said mold; and

removing at least a portion of said supplemental cavity.

16. (NEW) A method of manufacturing a light guide plate according to claim 15, wherein said injection molding gate is aligned longitudinally with a center portion of the incident surface.

17. (NEW) A method of manufacturing a light guide plate according to claim 16, wherein the molten resin turns after being introduced through said injection molding gate so as to flow through said supplemental cavity.

18. (NEW) A method of manufacturing a light guide plate according to claim 15, wherein the molten resin turns after being introduced through said injection molding gate so as to flow through said supplemental cavity.

19. (NEW) A method of manufacturing a light guide plate according to claim 15, wherein the light guide plate has a wedge shape with a thickness that decreases with increasing distance from the incident surface.

20. (NEW) A method of manufacturing a light guide plate according to claim 15, wherein the light guide plate has a reflecting surface opposing the emission surface, the reflecting surface having an uneven shape.

21. (NEW) A method of manufacturing a light guide plate according to claim 15, wherein the supplemental cavity has a longitudinal length less than a longitudinal length of the incident surface.

22. (NEW) A method of manufacturing a light guide plate according to claim 15, wherein

the emission surface extends in a plane, and

the injection molding gate faces the plane of the emission surface.

23. (NEW) A light guide plate according to claim 1, wherein the incident surface is formed from the cut surface without substantial intermediate processing.

24. (NEW) A light guide plate according to claim 1, wherein the incident surface is formed without substantial additional processing after the cutting face is obtained.

25. (NEW) A light guide plate for a surface light source device, having an incident surface for light input and an emission surface for light output, manufactured by injection molding which comprises:

forming a preform using a mold which is provided with an injection molding gate located at a predetermined distance from an eventual location of the incident surface, the injection molding gate being located at a supplemental cavity to which a flow of molten resin is introduced through the injection molding gate, the molten resin flowing through the eventual location of the incident surface to expand generally symmetrically with respect to a direction perpendicular to the incident surface;

removing said preform from said mold; and

removing at least a portion of said supplemental cavity.

26. (NEW) A light guide plate according to claim 25, wherein

the light guide plate has a wedge shape with a thickness that decreases with increasing distance from the incident surface, and

a surface opposite the emission surface has an uneven configuration.

27. (NEW) A light guide plate according to claim 25, wherein said injection molding gate is aligned longitudinally with a center portion of the incident surface.

28. (NEW) A light guide plate according to claim 25, wherein the molten resin turns after being introduced through said injection molding gate so as to flow through said supplemental cavity.

29. (NEW) A light guide plate according to claim 25, wherein the light guide plate has a reflecting surface opposing the emission surface, the reflecting surface having an uneven shape.

30. (NEW) A light guide plate according to claim 25, wherein the supplemental cavity has a longitudinal length less than a longitudinal length of the incident surface.

31. (NEW) A light guide plate according to claim 25, wherein

the emission surface extends in a plane, and

the injection molding gate faces the plane of the emission surface.

32. (NEW) A light guide plate for a surface light source device that has an incident surface for light input, an emission surface for light output and a wedge shape with a thickness which decreases with increasing distance from the incident surface, the light guide plate being manufactured by injection molding using a mold provided with a main cavity shaped corresponding to a shape of said light guide plate and a supplemental cavity connected to said main cavity at a location corresponding to the incident surface, said injection molding comprising:

(a) introducing a molten resin through an injection molding gate so that the molten resin flows to extend through said supplemental cavity;

(b) allowing the molten resin to flow from said supplemental cavity through the eventual location of the incident surface to said main cavity; and

(c) filling said main cavity with the molten resin through a lateral extension of molten resin and through a forward transfer of molten resin from a thicker portion around the eventual location of the incident surface toward a thinner portion distanced from the eventual location of the incident surface.

33. (NEW) A light guide plate for a surface light source device according to claim 32, wherein said injection

molding gate is aligned longitudinally with a center portion of the incident surface.

34. (NEW) A light guide plate for a surface light source device according to claim 32, wherein the molten resin

turns after being introduced through said injection molding gate so as to flow through said supplemental cavity.

35. (NEW) A light guide plate for a surface light source device according to claim 32, wherein the light guide plate has a reflecting surface opposing the emission surface, the reflecting surface having an uneven shape.

36. (NEW) A light guide plate for a surface light source device according to claim 32, wherein supplemental cavity has a longitudinal length less than a longitudinal length of the incident surface.

37. (NEW) A light guide plate for a surface light source device according to claim 32, wherein

the emission surface extends in a plane, and

the injection gate faces the plane of the emission surface.

38. (NEW) A surface light source device comprising:

a tubular light source; and

a light guide plate having an incident surface and an emission surface, with the emission surface extending along a length direction of the light guide plate, the tubular light source being positioned next to the incident surface, the light guide plate being formed by injection molding through an injection molding gate provided in a supplemental cavity extending in the length direction from the eventual location of the incident surface, the supplemental cavity being removed prior to positioning the tubular light source next to the incident surface.

39. (NEW) A surface light source device according to claim 38, wherein the light guide plate has a wedge shape with a thickness that decreases with increasing distance from the incident surface.

40. (NEW) A surface light source device according to claim 38, wherein said injection molding gate is aligned longitudinally with a center portion of the incident surface.

41. (NEW) A surface light source device according to claim 38, wherein the molten resin turns after being introduced through said injection molding gate so as to flow through said supplemental cavity.

42. (NEW) A surface light source device according to claim 38, wherein the light guide plate has a reflecting surface opposing the emission surface, the reflecting surface having an uneven shape.

43. (NEW) A surface light source device according to claim 38, wherein supplemental cavity has a longitudinal length less than a longitudinal length of the incident surface.

44. (NEW) A surface light source device according to claim 38, wherein

the emission surface extends in a plane, and

the injection molding gate faces the plane of the emission surface.